

# Intermittent Testicular Torsion in Adults: An Overlooked Clinical Condition

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## Key Words

Adults · Intermittent testicular torsion · Conservative treatment · Orchidopexy

## Abstract

**Objectives:** The aim of this study was to describe the management protocol for intermittent testicular torsion (ITT) in adults and report the outcome of this clinical condition, which is commonly overlooked in adults. **Subjects and Methods:** Sixty-three patients were included in the study. The inclusion criterion was the presence of sudden intermittent testicular pain over a duration of 3 months. All the patients underwent clinical examination, urine analysis, culture, and scrotal ultrasound with Doppler. The testicle was in an abnormal or in transverse lie and/or could easily be twisted. Scrotal support and analgesia were given for 1 month, then patients were offered orchidopexy or conservative treatment. Nineteen patients chose orchidopexy while 44 chose conservative treatment. Follow-up ranged from 3 months to 2 years. The improvement was assessed using a visual analog pain score. The outcome of the treatment was compared between the surgical and conservative groups using a  $\chi^2$  test. **Results:** The median age of the patients was 28 years (range: 17–50). Of the 19 patients who underwent or-

chidopexy, the pain resolved or visual analog pain scores improved (median 1/10) in 18 (94.7%) cases. On the other hand, 21 of the 44 (47.7%) cases that chose the conservative approach claimed their pain resolved or improved (visual analog pain scores: median 3/10) with a median of 13 months of follow-up. **Conclusion:** In this study, scrotal orchidopexy proved to be superior to conservative measures in cases of ITT in adults.

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## Introduction

Testicular torsion is a known urological emergency. The condition is mainly related to a congenital condition due to a bell clapper deformity that causes the testicle to twist suddenly around its cord leading to testicular ischemia and possibly infarction [1]. The annual incidence of testicular torsion is 4.5 in 100,000 males 1–25 years of age [2]. It can occur at any age but usually occurs in young males; this is an extremely painful condition and is the most common cause of testicle loss [3]. As many as 50% of boys with testicular torsion have had a prior episode of testicular pain due to intermittent torsion [4]. It is a commonly held belief that a testicle torsed for longer than 6 h

**Table 1.** Patient characteristics

Previous diagnosis before presentation	
Epididymitis	10 (15.87)
Varicocele	40 (63.49)
BPH/LUTS	4 (6.34)
Not specified	9 (14.28)
Site of testicular pain	
Left side	8 (12.69)
Right side	3 (4.76)
Both sides	52 (82.53)
Degree of testicular pain	
Mild: 0–4	2 (3.17)
Moderate: 5–7	46 (73.01)
Severe: 8–10	15 (23.80)
Pain provocation with	
Sitting	35 (55.55)
Crossing legs	10 (15.87)
Sexual activity	5 (7.93)
Not specified	13 (20.63)
Pain radiation to	
Groin	48 (76.19)
Legs	5 (7.93)
Unclear	10 (15.87)
Associated symptoms	
LUTS	1 (1.58)
ED	4 (6.34)
PE	2 (3.17)
None	56 (88.88)
Ultrasound findings	
Unilateral varicocele	35 (55.55)
Bilateral varicocele	12 (19.04)
Hydrocele	2 (3.17)

Values are given as n (%). BPH = Benign prostatic hyperplasia; ED = erectile dysfunction; LUTS = lower urinary tract symptoms; PE = premature ejaculation.

is outside the timeframe for survival [5]. If treated within 6 h of the presenting pain, there is a good chance of saving the affected testicle, as 90–100% of the testicles would be saved. If treated within 6–12 h 20–50% of the testicles would be saved, and if treated within 12–24 h 0–10% of the testicles would be saved [6].

Intermittent testicular torsion (ITT) is another important clinical condition that may be misdiagnosed even in a pediatric population [4]. Testicular torsion in adults is less common, and ITT in adults is even less reported and may not be considered in the differential diagnosis of acute testicular pain [7]. There is a paucity of studies in the literature regarding ITT in adults [6, 7]. Failure to recognize the existence of ITT can lead to repeated attacks of scrotal pain, swelling, and possibly the loss of a testicle [6].

Hence, the aim of this study was to describe our management protocol of ITT in the adult population and report the clinical outcome, hoping to attract attention to this commonly overlooked clinical problem in adults.

## Subjects and Methods

Sixty-three patients were included in this study during the period 2004–2014. Most of the patients were diagnosed previously by other physicians with different causes of testicular pain other than ITT, such as infection, varicocele, benign prostatic hyperplasia, or not specified (table 1). There are no proven objective tests for ITT. The inclusion criterion was intermittent testicular pain over a 3-month duration, and the degree of testicular pain was evaluated by visual analog pain score. The positions and activities that might have triggered the pain were noted. Pain radiation was also evaluated by subjective description of possible pain radiation to the groin or legs. No cases of testicular trauma or maldescent were observed. No cases of urinary tract infection or fever were detected.

Genital examination was done for all patients in standing and supine positions. Inspection of testicles revealed an abnormal/transverse testicular lie and/or ease of twisting the testicles was observed in all cases. Hence, we suggest a test called the ‘testicular twisting test’. According to this test, the testicle was carefully and gently twisted and then the patient was asked if he experienced similar pain. Then it was carefully untwisted and checked if the pain subsided or decreased. Care was taken at the end of the test to return the testicle to its normal position.

There was no case of ‘whirlpool’ cord noted. The pain was felt in both testicles but was worse on one side in 50 patients. In 61 patients the pain was moderate to severe according to the visual analog pain score. Thirty-five patients tried to open their legs and pull the testicles to relieve the pain. Clinical examination showed an abnormal or transverse testicular lie and/or ease of twisting in all the patients. All the patients were offered a period of at least 1 month of conservative treatment in the form of scrotal support to keep the testicles in the most comfortable position with additional nonsteroidal analgesics on demand. Following that month, patients were given the options of continuing the conservative approach or undergoing bilateral scrotal orchidopexy. Nineteen patients accepted scrotal orchidopexy while 44 chose conservative treatment. Scrotal orchidopexy was done under general anesthesia. Orchidopexy was associated with microscopic varicocelectomies in 4 patients for fertility issues and patients’ concern with varicoceles. Orchidopexy was done through a midline scrotal incision to reach both sides. Complete inspection of the testicle and epididymis in each compartment was done. There was one case of an area of scar tissue in the testicle. An adequate space was created in each compartment followed by the marking of 4 points on each lateral side of the testicle (fig. 1). This helped to avoid injuring small vessels overlying the testicle. Suturing was done with nonabsorbable 4/0 polypropylene with a round needle tip taking a good amount of lateral and midline dartos and suturing it to the tunica albuginea of the testicle. This was done similarly in the contralateral side. At the end, the dartos muscles of both sides were closed together with the midline, using 3/0 polyglactin running sutures (fig. 2). This was followed by skin closure

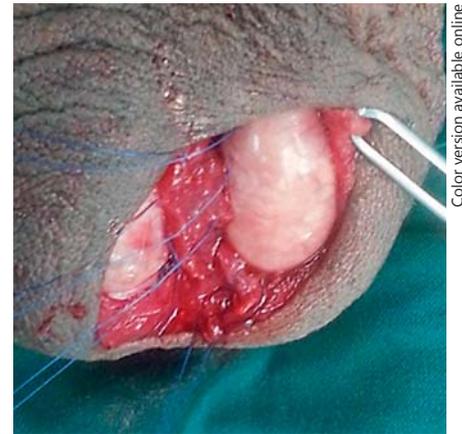
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**Fig. 1.** Color marking of the testicle at the site of planned sutures to avoid the vessels.

**Fig. 2.** One testicle is laid down after being fixed with sutures and the other one was tied down, confirming good vascularity of both testicles.

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using 4/0 polyglactin vertical mattress sutures. After this, dressing and scrotal support were applied. The patients were discharged within 24 h. Follow-up was scheduled at 1 week, 1 month, 3 months, 6 months, and 1 year. Further follow-up was done as needed. The assessment included the visual analog pain score and physical scrotal examination. Scrotal ultrasound was done as needed.

The study was approved by the local ethical committee and conforms to the provisions of the Declaration of Helsinki. Written informed consent was obtained from all patients.

#### Statistical Analysis

Statistical analysis was done using the program Stata version 8.2 (College Station, Tex., USA). The outcome of pain improvement was compared between conservative versus surgical groups of patients using the  $\chi^2$  test. A p value less than 0.05 was considered significant.

## Results

Of the 19 patients who underwent orchidopexy, resolution or improvement of scrotal pain was achieved in 18 (94.7%) cases (visual analog pain score: median 1/10). The scrotal pain persisted in 1 patient who was diagnosed with chronic orchialgia and improved on medical therapy. On the other hand, 21 of 44 cases (47.7%) reported significant pain relief (visual analog pain score: median 3/10) among the conservative management group. The remaining 23 (52.3%) cases in the conservative approach did not improve. Among those 23 cases, 11 patients (47.8%) were considering undergoing orchidopexy, but have not done so yet. Pain resolution and improvement was statistically significantly better ( $p < 0.001$ ) in the or-

chidopexy group compared with the conservative group. A mild hydrocele and bell clapper deformity was found in all cases. Urine analyses and cultures were negative in all patients. Scrotal ultrasound and Doppler showed normal blood flow to the testicles at the time of the evaluation in all the cases.

## Discussion

In this study orchidopexy resulted in a better outcome of ITT pain in adult patients than conservative treatment. The abnormal lie and bell clapper deformity were equally helpful clinical signs in establishing ITT, but none was associated with trauma and no infection like epididymitis or orchitis was observed among our cases. The symptoms of intermittent testicular pain were present in all patients for at least a duration of 3 months. An abnormal or transverse testicular lie was found in all patients. Since the pain subsided in all cases that underwent orchidopexy alone, even though the varicoceles went untreated, ITT was confirmed as the main cause for the testicular pain. We are aware that there are cases of testicular pain with no known etiology called orchialgia [7]. During orchidopexy, all the 19 patients had a redundant long cord with very typical bell clapper deformity. We detected a varicocele in 47 (74.60%) patients and a hydrocele in (3.17%) patients.

In the present study, the 94.7% resolution of pain following orchidopexy confirmed the 94–100% success of orchidopexy to resolve the pain [4, 8–12]. We achieved a similar outcome to the published data when orchidopexy was done electively for ITT.

There are a few case reports on ITT in adults [6–8]. White et al. [8] reported a case of ITT in a 32-year-old man who presented with recurrent bouts of short-lived right testicular pain with spontaneous resolution. The patient underwent orchidopexy and his pain subsided by the 6-month follow-up. Blumberg et al. [9] reported a 58-year-old male with ITT. He presented with acute onset left scrotal pain and swelling that lasted several hours. On evaluation, the pain had subsided significantly. Initial scrotal ultrasound with Doppler flow revealed normal blood flow to both testes. Testicular pain worsened within 3 h. Scrotal exploration showed the left testis was torsed. Bilateral orchidopexy was performed and the pain resolved.

The recurrent attacks of ITT can result in ischemic damage to the testis especially if it lasts too long [4]. Up to 50% of patients with acute torsion had previous episodes of testicular pain, suggesting ITT precedes acute torsion [10]. ITT may cause venous congestion with or without decreased arterial inflow, and can lead to testicular damage seen histologically as atrophic seminiferous tubules, peritubular fibrosis, or lack of spermatogenesis [11–14]. Hayn et al. [5] reported that misdiagnosis of ITT may create a cohort of patients who are at risk for acute unresolved torsion and potential testicular loss. Therefore, they recommended that urologists be proactive in recommending elective scrotal exploration when ITT is a likely diagnosis since the risk of testicular damage outweighs the morbidity of elective bilateral orchidopexy. Surgery appears also to result in pain relief in the majority of patients [11]. The most common presentation is the severe pain with rapid onset and resolution [11]. Significant physical findings include a very mobile testis and a long spermatic cord [13]. Classically, the affected testis has been described as lying horizontally instead of the usual vertical orientation [5]. This sign was reported in 52–75% of cases [10, 11]. The horizontal lie is thought to result from abnormal intrascrotal attachments of the testis (the so-called bell clapper deformity) with an abnormally high attachment of the tunica vaginalis to the spermatic cord, a long mesorchium, and a lack of the normal posterior attachment to the tunica vaginalis [1, 10]. Consequently, the entire unit can twist in the intravaginal space and result in the horizontal lie and/or torsion [5].

Our ultrasound findings done at the time of evaluation revealed normal blood flow to the testicles in all cases. Imaging studies are often misleading, as ITT may resolve before imaging [5]. Ultrasonographic findings of decreased blood flow, altered echogenicity, and hydrocele were reported in 42, 33, and 25%, respectively, of such

patients in the presence of pain, and in 8, 12, and 30%, respectively, of others assessed after the pain resolved [11]. Various ultrasound tools were utilized to help in diagnosis of testicular torsion, including the detection of spermatic cord spiral twist, but this finding is not always present [15]. However, some authors do not recommend scrotal ultrasound to diagnose torsion due to the false-negative results in 10% of cases, which lead to delayed surgery with possible testicular loss [16]. Despite the lack of symptoms in the contralateral testicle in some cases, we performed bilateral fixation in all patients because of the association with future contralateral torsion [5]. This was reported in some studies to comprise 30–43% of cases [1]. Hayn et al. [5] reported 100% testicular preservation and cure of pain following bilateral testicular fixation for ITT in boys. Eaton et al. [3] reported 97% complete resolution of symptoms after a mean follow-up of 7.9 months. Although 1 or 2 suture technique orchidopexies is commonly used by urologists, it is our preference to do the 4-point suturing technique. We have not encountered any testicular trauma using this technique.

The limitations of the present study included its short period of follow-up, nonrandomization, and the relatively small number of cases in the subgroups. However, the number of patients in the present study may be the largest number reported for ITT in adults. Although the clinical test that we suggested for ITT has not been validated, we hope this study will encourage other researchers to investigate this concept and reach a similar conclusion. We propose an important area of future research, which is the use of Doppler ultrasound at the time of the testicular twisting test to confirm the diagnosis of ITT by detecting diminished blood flow to the testis in addition to producing a similar pain. Prospective studies with a larger number of patients and a longer follow-up period are needed to confirm this clinical condition in adult patients.

## Conclusion

In this study, orchidopexy had a superior outcome in the management of this commonly overlooked condition in adults than conservative treatment. ITT is a condition that should be considered in the diagnosis of intermittent testicular pain in adults. Detailed history and focused clinical examination are essential to reach the diagnosis.

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